Having thus described the preferred embodiments, what is claimed is:

1. A method of processing a digital image that is defined in terms of a plurality of scanlines each comprising n input pixel values, said method comprising:

performing an error diffusion operation on a first scanline of n input pixel values;

deriving a first plurality of error values from said error diffusion operation performed on said first scanline of n input pixel values;

deriving m error values from said first plurality of error values, wherein m < said first plurality of error values;

storing said m error values in an error buffer; and,

performing an error diffusion operation on a second scanline of n input pixel values to modify said input pixel values of said second scanline using said m error values stored in said error buffer.

2. The method as set forth in claim 1, wherein said step of deriving a first plurality of error values from said first error diffusion operation comprises deriving n error values.

3. The method as set forth in claim 2, wherein said step of deriving m error values from said first plurality of n error values comprises grouping said n error values into m sub-groups of error values as said n error values are derived.

4. The method as set forth in claim 3, further comprising:

performing an averaging operation on each of said m sub-groups of error values to derive an average error value for each of said m sub-groups.

5. The method as set forth in claim 2, wherein said step of deriving m error values from said n error values comprises:

using a reduction factor R to divide said n error values into m sub-groups of error values according to m = n/R as said n error values are derived.

6. The method as set forth in claim 5, further comprising:

averaging the R error values defining each of said m sub-groups of error values to derive m error values.

7. The method as set forth in claim 3, further comprising:

summing said error values defining each of said m sub-groups of error values to derive an error value sum for each of said m sub-groups.

8. The method as set forth in claim 1, further comprising:

deriving a second plurality of error values from said error diffusion operation performed on said second scanline of input pixel values;

deriving m error values from said second plurality of error values, wherein m < said second plurality of error values;

storing said m error values in said error buffer; and,

performing an error diffusion operation on a third scanline of n input pixel values to modifying each of said input pixel values of said third scanline using said m error values stored in said error buffer, wherein first and second different offset values are used respectively in said error diffusion operations performed on said second and third scanlines of input pixel values so that similarly situated input pixel values in said second and third scanlines are modified by differently situated error values in said error buffer.

9. A method of digital image processing comprising:

performing an error diffusion operation on successive scanlines of input pixel values that define a digital image, said error diffusion operation comprising:

processing at least a first scanline of input pixel values according to said error diffusion operation and obtaining at least n error values;

sub-sampling said n error values to obtain m error values, wherein $m < n$;

storing said m error values in an error buffer;

processing a second scanline of input pixel values according to said error diffusion operation and using error values selected from said m error values stored in said error buffer as input.

10. The digital image processing method as set forth in claim 9, wherein said step of sub-sampling said n error values comprises:

defining m sub-groups of error values each comprising R error values;

processing each of said m sub-groups to obtain an error value corresponding to said sub-group and based upon said R error values defining said sub-group.

11. The digital image processing method as set forth in claim 10, wherein said step of processing each of said m sub-groups comprises:

averaging said R error values defining each of said m sub-groups.

12. The digital image processing method as set forth in claim 10, wherein said step of processing each of said m sub-groups comprises:

summing said R error values defining each of said m sub-groups.

13. The digital image processing method as set forth in claim 9, wherein said step of processing at least a first scanline of input pixel values comprises processing multiple scanlines of input pixel values and wherein said

step of sub-sampling said error values comprises a two-dimensional sub-sampling operation wherein said error values obtained from processing said multiple scanlines of input pixel values are combined in two-dimensions by one of an averaging and a summation operation.

14. The digital image processing method as set forth in claim 9, wherein said error diffusion operation further comprises:

using an offset to control the effective location of said m error values in said error buffer to vary which of said m error values are used in processing each of said input pixel values during said step of processing said second scanline of input pixel values according to said error diffusion operation.

15. A digital image processing apparatus comprising:

an error buffer;

means for processing at least a first scanline of input pixel values according to a select error diffusion operation and obtaining at least n error values;

means for sub-sampling said n error values to obtain m error values, wherein $m < n$;

means for storing said m error values in said error buffer; and,

means for processing a second scanline of input pixel values according to said select error diffusion operation using error values selected from said m error values stored in said error buffer as input.

16. The apparatus as set forth in claim 15, wherein said means for sub-sampling said n error values comprises:

means for defining m sub-groups of error values each comprising R error values; and,

means for processing each of said m sub-groups to obtain a single error value based upon said R error values defining said sub-group.

17. The apparatus as set forth in claim 16, wherein said means for processing each of said m sub-groups comprises:

means for averaging said R error values defining each of said m sub-groups.

18. The apparatus as set forth in claim 16, wherein said means for processing each of said m sub-groups comprises:

means for summing said R error values defining each of said m sub-groups.

19. The apparatus as set forth in claim 15, wherein said means for processing at least a first scanline of input pixel values comprises means for processing multiple scanlines of input pixel values and wherein said means for sub-sampling said error values comprises means for performing a two-dimensional sub-sampling operation wherein said error values obtained from said means for processing multiple scanlines of input pixel values are combined in two-dimensions by one of an averaging and a summation operation.

20. The apparatus as set forth in claim 15, further comprising:

means for introducing an offset to control an effective location of said m error values in said error buffer and for varying which of said m error values are used by said means for processing said second scanline of input pixel values.